

IN THE CLAIMS:

Please amend claim 1 as indicated in the following list of pending claims.

PENDING CLAIMS

1. (Currently Amended) An intracorporeal device having a protective self-repairing coating on a surface thereof, comprising:

a. an inner coating component which is on the surface of the device and which has at least one bilayer comprising a first layer formed of a first ceramic material and a second layer formed of a second ceramic material different from the first ceramic material; and

b. an outer coating component which is on the inner coating component and which has at least one layer less than 100 nm thick formed of nano-crystalline aluminum nitride that forms a water swellable material in an oxygen containing medium.

2. (Cancelled)

3. (Previously presented) The intracorporeal device of Claim 1 wherein the first and second ceramic materials are selected from the group consisting of zirconia, titania and alumina.

4. (Previously presented) The intracorporeal device of Claim 1 wherein the water swellable material is aluminum hydrate or aluminum hydroxide.

5. (Cancelled)

6. (Cancelled)

7. (Previously presented) The intracorporeal device of Claim 1 wherein individual bilayers of the inner coating component are about one to about 100 nanometers thick.

8. (Previously presented) The intracorporeal device of Claim 1 wherein the individual bilayers of the inner coating are about one to about 50 nanometers thick.

9. (Previously presented) The intracorporeal device of claim 1 wherein the inner coating component has at least one bilayer with zirconia in one layer and alumina in the other layer.

10. (Previously presented) The intracorporeal device of Claim 1 wherein the inner coating component has at least one bilayer with zirconia in one layer and titania in the other.

11. (Canceled)

12. (Previously presented) The intracorporeal device of Claim 1 wherein the inner component has a thickness of up to about a micron.

13. (Previously presented) The intracorporeal device of Claim 1 wherein each of the inner and outer coating components have a thickness in a range from about 1 to 50 nm.

14. (Previously presented) The intracorporeal device of Claim 1 wherein the at least one bilayer on the surface of the device includes a nano-scale hardness-imparting ceramic coating layer and a nano-scale toughness-imparting ceramic coating layer.

15. (Previously presented) The intracorporeal device of Claim 1 wherein each of the harness-imparting and the toughness-impairing coating layer has a thickness independently ranging from about 1 to about 100nm.

16. (Previously presented) The intracorporeal device of Claim 1 wherein the outer coating component has a thickness in the range from about 1 to less than 100 nm.

17. (Cancelled)

18. (Allowed) A nanostructure protective self-repairing coating for a substrate, comprising

- a. an outer coating component which is less than 100 nm thick, which is formed of a nanocrystalline compound selected from the group consisting of aluminum nitride, zirconium nitride and hafnium nitride capable of forming a hydrate or hydroxide compound upon contact with an oxygen containing environment and
- b. an inner coating component secured to the substrate which is formed of at least one bilayer which has a first layer of a first ceramic material and a second layer of a second ceramic material that is different from the first ceramic material.

19. (Allowed) The coating of Claim 18 wherein the compound of the outer coating component comprises aluminum nitride.

20. (Cancelled)

21. (Allowed) An intracorporeal implant, comprising:
a substrate selected from the group consisting of metals, polymers,

and a combination thereof; and

a protective coating thereon having a plurality of coating components comprising
a first coating component having at least one bilayer wherein each layer is
formed of a material selected from the group consisting of zirconia and alumina;

a second coating component disposed on the first coating component having at
least one bilayer with each layer formed of a material selected from the group consisting
of zirconia and titania; and

a third coating component disposed on the second coating component formed of
a compound which has microcrystallinity and which is capable of forming a hydrate or
hydroxide upon contact with an oxygen containing environment.

22. (Allowed) The implant of claim 21 wherein the compound is an
aluminum compound.

23. (Allowed) The implant of claim 21 wherein the compound is an
aluminum nitride.

24. (Allowed) The implant of Claim 21 wherein the compound selected is
aluminum nitride which forms aluminum hydroxide, aluminum hydrate, or mixtures
thereof.

25. (Allowed) The implant of Claim 21 wherein the coating thickness is in
a range from about 1 to about 100 nanometers.

26. (Allowed) The implant of Claim 21 wherein the coating thickness is in a
range from about 1 to 50 nanometers.

27. (Cancelled)

28. (Currently Amended) An intracorporeal implant which has a substrate selected from the group consisting of metals, polymers, and a combination thereof,

- a. which has an inner coating component secured to the substrate with at least one bilayer formed of a first layer of a first ceramic material and a second layer of a second ceramic material different from the first ceramic material and
- b. which has a protective, self-repairing outer coating component having a thickness of less than 100 nm, having nano-crystallinity and being formed at least in part of comprising a ceramic material formed of a compound selected from the group consisting of aluminum nitride, zirconium nitride and hafnium nitride and capable of forming a hydrate or hydroxide compound upon contact with an oxygen containing environment.

29. (Canceled)

30. (Previously presented) The implant of Claim 28 wherein the compound is aluminum nitride.

31. (Cancelled)

32. (Cancelled)

33. (Previously presented) The implant of Claim 28 wherein the coating further includes a plurality of nano-scale ceramic bilayers including a hardness-imparting bilayer and a toughness-imparting bilayer.